

# Earth Science<sup>®</sup>

Rockhounds' NATIONAL Magazine

This issue, with special features contributed by Kenneth Roberts, Louis Bromfield and others, marks the 10th anniversary of this magazine and the 16th annual convention of the Midwest Federation of Mineralogical Societies, of which it is the official publication.

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\*Look for these and other interesting and valuable articles in the September-October issue.

## EDITOR'S MEMO PAD

**S**PEAKING OF ANNIVERSARIES, this is the 10th Anniversary issue, commemorating the founding of EARTH SCIENCE magazine. Naturally, we are a bit proud of this occasion, representing as it does, the culmination of one full decade of effort.

The first issue of EARTH SCIENCE (DIGEST) was published in July, 1946, in Omaha, Nebraska. R. B. Berry was the editor. In order to accommodate library cataloguing, our volume numbering was later changed to start in January, which accounts for the fact that the present issue reads Volume 9, No. 3, and not Volume 10, No. 1, as some might expect.

Someone once said, in speaking of clubs and other sustained cooperative efforts, that if they were able to hold themselves together for a year, they had attained at least a degree of stability, and if after five years they were yet still in existence they might be considered to be going concerns. The fact that after ten years EARTH SCIENCE is still on deck, striving to serve in what its editors and publishers feel to be a definite and legitimate field of educational endeavor, should be in itself proof enough that our future is assured.

We feel that we do have a niche to fill in the educational world that is not as yet well covered by any other similar publication, and in attempting to occupy this void we have a definite obligation to the common welfare of all the people.

The teaching of Earth Science, as has so often been proven, is one of the weak spots

not only in our system of secondary schools, but also as well in our colleges and universities. Indeed, it might be said that it is one of our sore spots. When not one out of ten of our so-called educated people can tell you the difference between a rock and a mineral, or many other equally simple facts concerning the planet upon which we live and of which we are a part, it is a sad commentary upon the effectiveness of our learning process, in so far as our schools are concerned.

That many people feel the need of such knowledge to round out their educational background, is evidenced by the fact that Earth Science hobbies have become almost a craze in many parts of the country. Literally hundreds of clubs and societies have been voluntarily organized to carry on a great variety of activities, all having some definite bearing upon one or more of the numerous facets of Earth Science knowledge. These groups carry on, under their own leadership, with varying degrees of educational proficiency, programs and other activities which improve and supplement the educational background of their members.

In turn these clubs, feeling the need of greater cooperative efforts, have organized themselves into six fine regional federations, and a coordinating body, the American Federation, which acts only in an advisory capacity to serve the general welfare of all of our clubs. The backbone of the entire movement, however, it must be

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admitted, is in the magazines and other publications supplementing these club activities by disseminating valuable information of all kinds, which cannot be found in any other literary service.

EARTH SCIENCE magazine feels proud and humble to be an integral part of this great movement, and it is our fond hope that we may be able to serve you, our readers, well, and that you will be able to serve us also by your continued interest and support for many long decades to come.

\*

#### *Would You Believe It?*

Old Mother Earth is really getting heavier. In fact, it is said she is adding weight at the rate of from 100 to 1,000 tons every day, in the form of meteorities and meteoric dust constantly raining down out of the sky. At the same time, however, she is losing weight, in the form of hydrogen atoms, of which our upper atmosphere is composed, some of which continually are swept off into outer space. This loss, however, is thought to be negligible. While the gain in weight seems enormous, amounting to some 730 million tons since the time of Christ, or in 2,000 years, it is really insignificant when compared with the total weight of the Earth, said to be about 6,000,000,000,000,000,000 (6 sextillion) tons, so that the gain of a mere 730 million tons would be only a billionth of 1% during the past 2,000 years. This is nothing to be alarmed about.

\*

#### *Nature Cuts It Thin!*

Something else to think about. When the hydrated mica, known as vermiculite to the mineralogist, is quickly heated to a temperature of 2,000°, the raw flakes (which are composed of about a million laminations per inch, containing moisture which turns to steam) "explode," causing the flakes to expand to about 15 times their original thickness, creating thousands of dead air spaces in each granule, making one of the best insulators known to man against both heat and cold. This material is known as "zonolite" both to the trade and to laymen.

#### *Astounding but True!*

Are you aware that there is scarcely a square mile of soil on the Earth's surface that does not contain atoms or particles of matter representing every one of the other 196 millions of square miles, more or less, of the Earth's surface? Incredible, you will say, but a fact nevertheless. When you consider the great age of the Earth itself, and the constant action of the winds and the water throughout all of those million years, it does not seem improbable that this could be true. Over and over again the continents have been worn away and carried down to the sea. Much matter has been dissolved in the ocean waters and thoroughly stirred and disseminated by the currents and winds. Finally it has been precipitated and settled to the bottom of the oceans to form other rocks, which have eventually been re-elevated to make land areas, which have again been eroded and disintegrated to form our soils. Thus in each square mile of the present surface of the Earth, there may be found at least a sample of every other square mile.

\*

#### *"Man-O'-War"*

Mosaic or intarsia? This is the question! Editorially we know of no better source to turn to when such a question is raised than the Webster's Dictionary that lies on our desk. Our dictionary reads: "MOSAIC. A surface decoration made by inlaying in patterns small pieces of colored glass, stone or other materials; also the process of making it." The definition here given for an INTARSIA is: "Decorative designs produced by inlaying wood in a background of wood." Now "Man-O'-War" most definitely is not made of wood, or anything resembling wood, so in so far as we are concerned it will always be a mosaic—and a right handsome one at that.

\*

#### *Congratulations Rochester!*

Anniversaries are always significant, especially those which are divisible by five, and so we congratulate the Rochester (Min-

nesota) Earth Science Society upon its being able to celebrate the anniversary of the first five years of its existence, during the month of March, this year.

This very fine society has grown from a modest beginning in 1950, into one of the more prominent organizations in the Midwest Federation. It has been especially fortunate in excellent leadership and in the high quality of programs throughout the years. They have also promoted many fine field trips and have always been well represented at the annual conventions of the Federation.

\*

#### *Honors for John Mihelcic*

We are all very proud of our good friend John Mihelcic, a "wheel-horse" of the Michigan Mineralogical Society and of the Midwest Federation as well, for the fine honor which has recently been conferred upon him.

John, known to all of his students as a "good guy," has been a drafting and industrial arts teacher in the Cooley High School of Detroit for more than a quarter of a century. He was named Michigan's "Teacher of the Year" at the annual banquet of the Michigan Industrial Educators' Society, held recently at the famed Sheraton-Cadillac Hotel.

Mihelcic, who is recognized as one of the best known amateur mineralogists and lapidaries in the Midwest, has also taught classes in gemology at the Cranbrook Academy of Science, and worked summers during World War II cleaving industrial diamonds for war industries.

He is past president of the Midwest Federation and Associate Editor of EARTH SCIENCE. His good wife Lillian was the Federation's very efficient secretary for several years. Congratulations, John and Lillian!

—BEN HUR WILSON, *Editor*

\* \* \*

## LETTERS

Ekalaka, Montana,  
June 1, 1956

DEAR DR. WILSON:

Your communication of May 20 arrived by yesterday's mail stage. I appreciate your promptness in writing to me and am pleased that you care to use my article. Thank you for the copy of EARTH SCIENCE. I am sending today to the Chicago address a check for my subscription and think others will be interested.

In response to your request for pictures, I found none worthwhile among our bone digging group, but am enclosing in separate package some taken by the *Life* magazine photographer. I hope you can get permission (*alas, not yet received*) from that magazine to use them. If you do, you will please give credit to *Life*.

I particularly like the one showing the children at work. Children enjoy our bone digging. Mr. Lambert (at right) is instructing them how to treat the bones as they are uncovered. This is done with chemicals, rice paper, and strips of burlap dipped in plaster. The bare buttes in the background are characteristic of the places where we make finds.

The indoor picture shows Mr. Lambert telling some ranchers of his work in assembling and mounting our tracodon. The tail is now finished. *Life* magazine has never used these pictures but gave them to our museum. I am enclosing postage for their return.

Sincerely,  
J. HUNT  
(Mrs. Carl Hunt)

\*

7701 Mission Blvd.,  
Riverside, California,  
April 27, 1956.

DEAR DR. WILSON:

Your nice letter and pictures, or should I say card and pictures, arrived in the mail and like you we are anticipating the Midwest convention and hope that it will be a good one. Sam is planning on having a display there this year and has arranged for space. We also will exhibit at Fresno and have been asked to do this to help increase the number of fossil displays, as this is the first year that California has included fossils as part of the Federation exhibits.

To this old fossil, they are one of the most important features of any show. Where people are so interested in geology I can not imagine a show without them.

We are just home from a recent trip up into Nevada, Utah, Idaho and Oregon. I have a large box of material from the Madison limestone of Miss. Period to clean and prepare for display plus, some of my favorite fossil material—fossil cones, polypores and small limbs; a number of pieces of bark, a bird jaw with teeth in place, a wonderful specimen of the skeleton remains of a large drumfish and about 20 different specimens of teeth of reptiles, fish and a few unidentified. I was so surprised to find the won-

derful polypore on this last trip and it seemed I just came face to face with it, as it peeked out from a bank of soft sandstone under a ledge of calcareous limestone. I used such care and am so proud of it. One of the cones we found is 5-1/16 inches long. This added to our collection of some 40 cones makes a real addition to the collection.

Our trips terminated with a week spent in our California desert collecting material for spheres for Sam. Now we are getting things caught up here at home and planning a trip of several weeks duration into that great State of Texas, where we anticipate attending the convention at Austin. Also, needless to say, I am looking forward to a few explorations for fossils.

I have drawn a sketch map of the area here in California where we collected trilobites and am including other pictures which you may scan for choice to use with my story. I am sorry that I have been so long in getting this material to you. Just love to gypsy and glad that my husband enjoys our trips. Will confine myself to writing more as I get more time at home.

Have been asked by my old geology teacher if I were trying to beat the rap or was I wanted by the FBI? In other words you called me "Edith" in the January-February issue and my friends have been kidding me since then.

Sincerely,  
RUTH A. KIRKBY

\* \* \*

#### AUTHORS

"KENNETH ROBERTS has endowed Henry Gross financially so that he can devote himself entirely to dowsing. Together they operate Water Unlimited, Inc., and in recent months have pointed out water supplies for Canadian Industries, which took over the Dupont munitions interests in Canada; for the A. C. Lawrence Leather Co. ( a subsidiary of Swift & Co.); for a new Bristol-Myers plant in Pennington, N. J.; for the huge nurseries of the Wayside Gardens in Mentor, Ohio; for the Maine Maritime Academy, which had been closed because of drought, and for individuals high on lists of chemists, engineers and other professional men. . . . Cordial permissions from LOUIS BROMFIELD to reprint material of interest to rockhounds from his book "Malabar Farm" came shortly before his recent lamented death. . . . Both Louis Bromfield and Kenneth Roberts came to fame among America's distinguished authors not only as novelists but

also as writers on aspects of earth science, and both are represented in our columns because of friendly association with our managing editor. Louis Bromfield wrote "The Rains Came" and other works of fiction as well as "Malabar Farm" and other books on farming. Kenneth Roberts' many works of fiction include "Northwest Passage" as well as his books on water dowsing. . . . DR. W. B. S. THOMAS, of Lyons, New York, will be remembered for his "Geological Fairy Story" in our September-October, 1955, issue. . . . RUTH A. (MRS. SAMUEL E.) KIRKBY (see "Letters") has shared her experiences and lore with school children of Riverside, California, through hundreds of talks and demonstrations. . . . PERNEL BARNETT, contractor, of Orange, California, again recounts an adventure in the field for us, in his always graphic style. . . . HENRY P. ZUIDEMA, consulting geologist, contributed "Ancient Wings in the Rocks" to our September-October, 1955, issue. . . . JESSICA (MRS. CARL) HUNT lives 40 miles from the railroad, at Ekalaka, Montana. (See "Letters.")

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## Trilobites in the Marble Mountains

by RUTH A. KIRKBY

*We piled out of bed in the middle of night,  
For this was the weekend to hunt trilobites.  
We climbed in our car and gave it the gas,  
And soon found ourselves topping Sheephole Pass.*

IT WAS EARLY Saturday morning when we left the slumbering town of Riverside to travel in an easterly direction for the desert areas. The winding narrow ribbon of pavement wound around through Morongo Valley, up on the plateau covered with Joshua trees, stretching their branches in grotesque shapes like an early morning yawn. The sweet fresh air of a predawn morning pervaded the little towns of Yucca Valley, Joshua Tree and 29 Palms as we sped along towards Sheephole Pass.

My husband Sam had been persuaded to make this trip for fossils on the pretense that the material above the fossil shales was excellent cutting material for spheres. Unable to resist a field trip and knowing full well that he would be drafted to help me with any heavy material, he acquiesced and graciously allowed himself to be a party on another fossil collecting trip.

The view of the mountain tops from the crest of the pass to our right, resembled drowned peaks with the sand whipped fans climbing up their sides. We descended into the basin of Bristol Dry Lake with the giant salt works and the large booms hovering above the long rows of sediments piled along the lake bottom. Those nearest the road looked like long rows of pyramids, while those in the distance seemed like

great stacks of baled hay floating on a misty vapor.

To our left and near the junction of highway 66 was the recent cinder cone of Amboy. The cinders were scattered heavily near the crater, but sparsely along our road. Some of the cinder piles looked like "planted gardens" with vegetation growing in the wind whipped sand that had caught among the cinders.

The sun was now breaking over the horizon and the smallest plants cast long shadows on the sandy lake bed.

Our highway junctioned with U. S. highway 66 at the town of Amboy and we turned east with the heavier traffic for another 12 miles. By prearrangement we met another four cars at Chambless, where we began caravanning along a narrow road which angled off to the railroad station of Cadiz. We followed this road around the curve, past the station and then carefully swung off the road over the sand and sage towards the foot of the southern tip of the Marble Mountains. Years ago an old road had been cut up the end of the mountains, but the remnant was so rough as to discourage any vehicle other than a jeep.

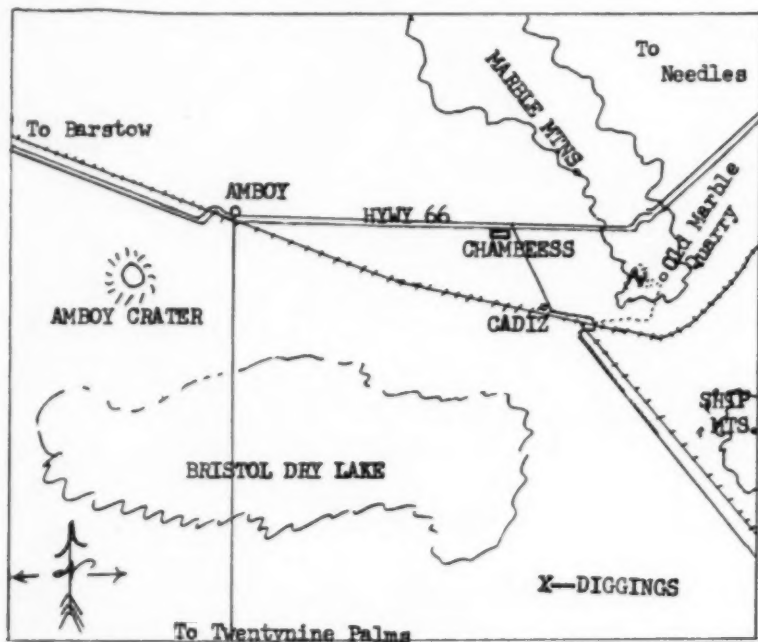
Large cliffs protruded in a V shaped projection ahead of us; to the right stood a large boom, reminder of the days when a

marble quarry had operated here. We took the left canyon path and proceeded to circumvent this projection and followed up the canyon a short distance. We soon found diggings of other fossil collectors in the Lower Cambrian slaty green shales. An area covering a distance of a hundred feet or more had been uncovered and great piles of talus were shoved down into the canyon.

Ledges of algal limestone rose above us with round and oval shaped designs of reds and browns in a deep blue-gray background. This was the nice cutting material

Several members of our party sorted over the piles of tailings for specimens that might have been accidentally thrown away. We soon learned that the slabs that split nice and flat were non-fossiliferous, while the pieces that split at odd angles exposed specimens of the pre-historic seas.

We anticipated finding a good specimen of a trilobite or tri-lobed complex form of Arthropod, whose name came from the Greek meaning in three sections. The bodies were grooved longitudinally in three lobes and also were divided in three sec-



for spheres and bookends. Not to forget that now and then a fossil invertebrate might be found in this limestone.

The angle of dip was running in a NS direction and the great cliffs above were weathered by differential erosion and folded in great arcs. The shales impressed us with their antiquity by actually smelling musty. We each found a place to explore and began to dig into the shales for sections that we could split and therein hope to find a good fossil specimen of life of the Lower Cambrian Age.

tions: namely, the head shield of chitin; the thorax or body portion which consists of a number of jointed legs, two branched, the lower for crawling and the upper ones considered as gills; the tail or pygidium, which in these of Lower Cambrian were spar shaped.

As the men pried into the crevasses working out large sections of shale for us to split, they quibbled, "Why not find a live one?" This remark reminded us that we were exploring an area supposed to have been deposited around five hundred million

years ago. The oxidized spots could have been the evidence of the primitive soft tissue plants, sea weeds, lichens or other small sized invertebrates that had populated these early seas. We found impressions of brachiopods, probably the ones with phos-

form of eyelobe, possibly a light lens but not evolved long enough to have an eye like the great compound eyes of the trilobites of Silurian Period.

We could vision these fossil trilobites as little scavengers in a great sea where we



"Five members of our party all diligently looking for trilobites. I'm facing camera and this is my big Boot. Photo by Mel Humble. Mrs. Humble with back to camera."

phatic shells. We also found many head shields of the different species and many sizes from  $\frac{1}{4}$ " up to 4" across. Probably these were shields shed as they grew in size, like the crab. The ones that we found were of a very primitive order and with the early

were now hauling water for our use. Where the sage and sand now covered the landscape, a prehistoric sea had built up layer after layer of fine grained silt and our little trilobites had buried themselves in this silt, and as time passed more and more silt built

up great beds of material so that the impressions of this life could be preserved in the rocks for us to ponder millions of years later. Some of these beds were forty feet in thickness and we deduced that this sea must have existed for a long period of time to have built up these thicknesses of shales.

While digging and splitting these shales, jests and ideas flowed rapidly. Mac was now the official advisor and cautioned everyone to use care in not destroying a good specimen. His generosity in loaning his knife, chisels and other tools kept him busily occupied. Lucy, his better half, was busy splitting away at the smaller pieces of rocks. Fortunately it was Lucy who found a perfect specimen, one of the index fossils for Lower Cambrian, *Olenella bristolensis*. This piece of good luck gave much enthusiasm to the rest of the party and everyone worked with added vigor, anticipating finding a complete specimen with each fresh break.

The afternoon sun was fast climbing over the top of the cliffs above our canyon diggings and as it dropped over the crest, we found it difficult to see the faint impressions in the shales. Reluctantly we made our way back to camp to prepare our evening dinner and build up a good campfire.

This was to be an unusually fine night for camping on the desert. The moon was full and came up with all the beauty of a golden moonlight. The desert stretched out like that shimmering prehistoric sea below us. Our conversation naturally turned to pondering over the fossils we were finding and we spoke of them as familiar beings with long names attached by present day geologists.

The sharp escarpments of the giant cliffs looked down on us as we left the smoldering embers of our campfire to crawl in our sleeping bags and dream of trilobites.

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On request, EARTH SCIENCE will furnish list of leading articles in back numbers that are available.

## Picnics with a Purpose

by JESSICA HUNT

WE WHO LIVE in the little town of Ekalaka, Montana, forty miles from a railroad, enjoy picnics probably as no others do. There are many spots of scenic beauty in Montana, but we do not select one of these for our day of fun. Instead, we roast our wieners and spread our lunch most likely on top of some barren mud butte with others like it towering all around us. The sun beats down on us unmercifully, and a Montana wind often plays havoc with our complexions, but what care we? We are there for a purpose.

Probably some cowboy riding the range has told us that he has seen a bone protruding from the mud, and we are there to dig up a dinosaur. Perhaps not a whole one, for only once have we found one intact. We spent most of our picnic days one summer excavating a trachadon, the duck bill dinosaur, a bone at a time. It was slow and tedious work, but what a thrill was ours when we got it all into our museum and one of our number assembled and mounted it. Here it stands now, huge and majestic, exciting the wonder of our visitors, who come from practically every state in the union.

We also have to our credit two giant skulls of the triceratops and many leg bones and vertebrae of that mighty three-horned monster. One day we discovered the toe bones of the terrible *Tyrannosaurus rex*, the largest of the carnivorous dinosaurs.

One of our greatest treasures is the skull of a large trawdon, the only one of its kind ever found. It now is in the American Museum of Natural History in New York, but the paleontologists there have sent us a cast of it that cannot be told from the original. They also made for our display a half cast that shows the nine inches of skull that protected the tiny brain. These New York

scientists have named the creature, and they call it the *Pachaciphalasaurus grainer*. The first word means a "thick headed lizard". "Grainer" is in honor of Dr. Grainger, who supervised the preparation of the skull for display.

Sometimes we set up tents and make our picnic last several days. Then besides the dinosaur bones, we bring home fossil leaf imprints, ancient tracks of small animals,

gastroliths (gizzard stones), and interesting pieces of petrified wood. We take time to dig out sea fossils, such as giant turtles, brachiopods, trilobites, gastropods, and baculetes.

Our picnics not only have been a lot of fun, but also have given hundreds of people an insight into what this old world was like during the cretaceous period of time sixty to one hundred million years ago.

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## Petrified Wood (and Uranium) in the West

by PERNEL BARNETT

FREQUENTLY, petrified wood and uranium are common associates, petrified wood being the host. A log may have only enough uranium to tickle the geiger counter or scintillator, or it may have enough to be mined as rich ore. The most beautifully colored green petrified wood I have ever seen comes from Lenwood, a small community near Barstow, California. It is semi-transparent and has a rich light green color, with not many fractures and is highly radioactive, but the pieces are small; the largest only a few pounds in weight. A friend worked two days for the small pieces he dug out. This location has recently been closed, I am informed. It is not more than a half-mile from a transcontinental highway.

Petrified wood is found all over the world but here in the west there is little first class wood left near populated areas. Naturally, this would be the case with 50,000 rockhounds in southern California alone; consequently we are traveling hundreds of miles for good specimens. Nevada has several places where good quality wood may be obtained. One should be careful not to get anything from parks or other protected areas.

Recently three of us went to Topaz Mountain in Utah for genuine topaz (most-

ly colorless). At night with the aid of a flashlight they can be picked up out of the wash, or the sand in the wash can be sieved



"... red cliffs hundreds of feet high ..."

with a screen of 3/16" mesh. The ground has been filed on by the Mineralogical Society of Utah. It is a good thing they filed when they did, for the uranium hunters have the surrounding territory completely staked now. In the area belonging to the society, rockhounds are welcome to try their luck. We obtained some good clear crystals, a few of a beautiful topaz color. Many were small ones but some were from two to ten carats in weight.

While collecting topaz crystals, a rockhound informed us that two years previously he and a party of several cars had gotten some beautiful petrified wood in various colors in the San Rafael Swell, directly north of Fruita about 75 miles. He said it was all desert and no gasoline could be obtained. After having traveled the Death Valley country we figured our car would feel right at home. As it was only some 125 miles southeast of Topaz Mountain we started next morning, after carefully going over the directions again.

Fruita, in Capital Reef National Monument, we found, was in a narrow canyon with vertical walls hundreds of feet high. When we inquired of the natives how to get out of there to the north they indignantly and emphatically stated we did not go north—without a helicopter. Only a bird could go the one direction we couldn't, —straight up.

The road for many miles had been rough and unpaved and was going to be worse. After much scratching of heads we decided to follow through the canyon some thirty miles until we could turn into the San Rafael Swell country. From here on everyone was talking uranium. Uranium was in the air as well as the ground. Once out of the National Park, uranium claims were everywhere. Even rockhounds talked uranium. In the San Rafael Swell some of the hills looked like honey combs from the many tunnels in them. The roads were like an old fashioned washboard and would shake the teeth out of a five year old if he didn't keep his mouth shut.

Where one road crossed highway 24, an enterprising merchant had a shack with a bar where the weary traveler could wet his whistle, and at a reasonable price. Even cold soft drinks could be had, unlike the early time saloon. When the parched throat was relieved, the conversation was about—uranium. We were entirely out of place inquiring about petrified wood, although one man admitted he knew what it was. The grizzled, unlettered prospector could expound on the various geologic formations for hours. Few of us had ever heard of the Schinlee or Schinerump formations, or other unfamiliar words. But here—big money boys are not the only ones who talk about large sums, for once in a while some prospector makes it too.

Seldom does one see the once familiar burro in the prospector's entourage. Nowadays it is the four wheel drive (many brand new) that one meets, or the low flying airplane. Roads, (dirt variety that has had a pass or two with a grader), are appearing everywhere; these are well marked by clouds of fine dust. Even these dirt roads are a boon to the rockhound, as much of this country has been completely without passable roads. The Henry Mountains, San Rafael Swell and Circle Cliffs are in the southeastern part of Utah, west of the Colorado River.

Paved roads in Utah are well signed, but after one leaves the blacktop one is on his own, except for uranium mine directions, which don't mean a thing to tourists. Gas stations are a long way apart. So if you travel here, take extra gas, water and food, and everyone advises a four wheel drive. As there are no signs be sure you remember your way in. Travel here is a serious business. Lost and out of gas one can forget the scenery fast. Don't I know? Sometimes you can get a uranium hunter to stop long enough to give you a few directions.

After wandering around for some 100 miles or more without finding the bonanza of petrified wood we were after, we decided our friend must be mistaken in direc-

tions, even though he had been at this game for several years. So we turned south toward the Circle Cliffs, another uranium hot spot. Later we found this corrected a slight error in direction of some 180 degrees on the part of our rockhound friend of Topaz Mountain. But, as between friends, why mention such a trifle? In one county of Utah it is said there are more claims filed than will cover the entire county including towns and farms. In places claims are filed two and three deep. You don't see the familiar six shooter swinging low at the hip as in early days, but every-

back. Later we found this was the road we should have taken.

After successfully negotiating all the hairpin turns (only had to back up on one) we found a Government A.E.C. (Atomic Energy Commission) man at the top, who tried to help us find petrified wood. He said he had seen it somewhere around there in immense quantities. A.E.C. is grading roads, etc., to help prospectors get around. This means they are still very anxious to develop more of the energy giving material. In fact, there were so many new roads (no signs) we got lost, which didn't help the



"Travel here is a serious business. Lost and out of gas one can forget the scenery fast. Don't I know?"

one has some kind of a shooting iron hidden away. Excitement is at fever pitch, so to me it spells trouble.

When we arrived at the foot of the Circle Cliffs the road divided. One turned left to the Henry Mountains, the other to the right, climbing the sheer cliffs by switchbacks. One look at those red cliffs hundreds of feet high and another at our gas gauge and I began to worry whether or not we would even reach the top. To attempt the Henry Mountains was entirely out of the question, as that meant another 30 or 40 miles there and a like amount

gas tank one particle.

Sure enough, there were immense fields of petrified wood. Also there are septarian nodules. However, most of it is not what we were looking for. A little was radioactive. We had been told that in some places the prospectors had made a path around the different logs in their hunt for uranium. Much of what we saw was a dirty black. There are several places in the Circle Cliffs where wood may be picked up, some of which is excellent. It comes in various colors including jet black and polishes well. One claim owner invited us up

to his property but we had to decline because of the shortage of gasoline.

Insofar as we were able to learn there is no gas station in the Circle Cliffs despite all the activity. After another thirty miles we found a gas pump at Boulder, Utah, which certainly looked good to us. We started out with two extra 5-gal. cans but it proved to be not enough. Utah has petrified wood and beautiful scenery to go with it, but I can enjoy it more when my gas tank is full.

We drove to Excalante which also has lots of wood, although it has been run over for years and must have yielded many tons. Also we found some dinosaur bones;

one was a beautiful blue. There is good rock yet to be found; in fact, most of our load came from this area. Some is within a hundred yards of a blacktop road. Two or three places are within three miles of town. Here one can obtain gas, groceries, etc., even ice, sometimes.

One can find small as well as large limb sections, or a whole tree trunk. Of course you will find very little of the best quality, highly colored rock, without fractures, lying on the surface waiting to be picked up. However, it doesn't take much work to uncover very desirable rock, that would be considered tops in most anyone's collection.

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## Millerite at Franklin, New Jersey

by DR. W. B. S. THOMAS

THERE ARE MANY COLLECTORS of Franklin, New Jersey, minerals who have a want list of perhaps ten or twelve minerals. Almost all of these lists contain the names millerite, thorite, zircon, etc.

Millerite has been seen by a few perhaps only once in a lifetime of collecting. Specimens are unobtainable from most dealers. Miners are not familiar with it and it is rarely that anyone will take you seriously around Franklin. It does not fluoresce, and you will need a 10X microscope to find the fine brassy hair in a vug. You could perhaps spend a month trying to find someone who would be willing to help you find a millerite specimen to complete a collection of Franklin minerals.

Yet it is comparatively easy to find once you know how. The report by Palache says it occurs in the gray porous dolomite of the Buckwheat Dump. You see thousands of tons of gray porous dolomite and gray calcite when you enter the dump.

As you park your car, ahead of you is a tall concrete pillar. Just back of that, to the right is the porous dolomite in foot

square chunks. Pick one that is porous, has vugs and appears "sugary"—not too solid, not too rotten and porous. Take a few pieces home with you. There is no percentage in holding the big rock up to your ten power microscope. Take it home, break it up into hand-sized chunks so you can examine the rock piece by piece, vug by vug.

One such piece yielded at least ten millerite specimens. One was like the classical description in Palache, fine brassy hairs strung with beadlike crystals of dolomite. Another was like a small harp with tufts of yellow, fibrous ball like goethite. There were also crystals of sphalerite in vugs. Some of the cavities had fine perfect diamond like quartz, which is rare at Franklin. They were needle like, or doubly terminated, and brilliant. Other vugs were filled with the rare silvery talc-like powder called chlorite.

And there were crystals of thorite altering to glassy orangite, and fine red hairs of descloigite and nice doubly terminated brilliant zircon crystals in the matrix.

You can go into the dump at night with



any one of a dozen portable black light sources, you can haunt the homes of miners, and you can pass the material by in the daytime, all without success — unless you are willing to do a little home work on hand-sized pieces of the porous gray dolo-

mite, one chunk of which, a foot size cube, yielded five of the most wanted minerals on the Franklin mineral list.

Here then is an intriguing project which should prove a challenge to ardent collectors of rare minerals in the region.

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## Preview of XXth International Geological Congress

by H. P. ZUIDEMA

MEXICO'S varied geological features become the particular interest of North American geologists this year. The Twentieth International Geological Congress is meeting September 4 to 11 in the capital city of our neighbor of the south.

There will be 16 field excursions between

gamut of geologic interests—stratigraphy, mining geology, engineering and petroleum geology, vulcanology, paleontology. Those with an interest in man's early activities in Mexico will also find that our hosts have not forgotten them. Trips are included to famous archeological sites, including the



CAVES AND CRAGS CUT BY THE PACIFIC'S BREAKERS AT ACAPULCO (Last Stop on Excursion A-9).

August 14 and the opening of the Congress and 16 additional field trips between September 12 and 29. These will take North American geologists and their colleagues from many lands to all parts of Mexico—from the Rio Grande to Guatamala.

Features to which Mexico's geologists will guide their guests will run the entire

Mayan localities in Yucatan. Speleologists will explore the republic's noted caverns.

Cooperating with the executive committee of the Congress is the American Geological Institute. A 40-page pamphlet, "Field Trip Resumes," issued by the AGI (2101 Constitution Avenue, Washington 25, D.C.) for \$1.50 is recommended to those

SULPHUR IN INDUSTRY	
	Sulphur Consumption
(As Acid)	33.0%
Fertilizers	18.5
Chemicals	7.5
Paints and Pigments	7.0
Iron and Steel	3.0
Petroleum Refining	4.5
Rayon and Films	6.5
Misc.	80.0
(Sulfides, Di-sulphites, Dioxides)	7.0
Pulp and Paper	} 12.5
Rayon	
Pesticides	
Rubber	
Chemical and Misc.	20.0
Total .....	100.0%

who wish to schedule their time to get the most out of the Congress program.

Time and care spent by the organizing committee in preparing the field program are evident to anyone familiar with the ground to be covered. Mexico is approximately one-fourth as large as the continental United States and much of the area is mountainous. Main roads are excellent and are being improved constantly, but hard top does not extend to many of the areas of geologic interest. The field trips come during the rainy season, when secondary roads are difficult to use or are impassable. Private vehicles, therefore, will be barred from some of the tours.

Transportation will be by car, plane, bus, jeep—and horseback. A brush-up course in Spanish will add to the pleasure of those seeking full enjoyment from their contacts with the hospitable people of our southern neighbor.

A post-Congress field trip of particular interest, open to those registered for the sessions, will be held September 19-22 to permit a visit to the newly-developed sulphur operations of the Isthmus of Tehuantepec.

As in the Gulf region of the United States, sulphur production is from the cap-rock of deep-seated salt domes and is car-

ried out by the Frasch process—the pumping of superheated water into the deposits as deep as 1,000 feet to melt the sulphur. The molten sulphur is forced to the surface with compressed air.

Three Mexican salt domes with commercially exploitable sulphur have been found—all in the area of the Gulf seaport of Coatzacoalcos. These are the San Cristobal Dome, 36 miles up the Coatzacoalcos and Coachapan Rivers from the Gulf of Mexico; the Mezquital Dome, across the river from San Cristobal, and the huge Jaltipan Dome, 20 miles to the west.

Three United States companies have set up operations—Mexican Gulf Sulphur at San Cristobal; Pan American at Jaltipan, and Gulf Sulphur at Mezquital.

At San Cristobal two years ago the first Frasch-process sulphur produced outside the United States flowed in the wells. By coincidence the first oil produced in Mexico also was brought up at San Cristobal half a century ago.

Mexico's first recorded use of sulphur was by the Aztecs who climbed to the crater of Popocatepetl to get the mineral for medicinal purposes. Cortes' soldiers went to the same source for sulphur for gunpowder. Today, Mexico's rapidly growing industries



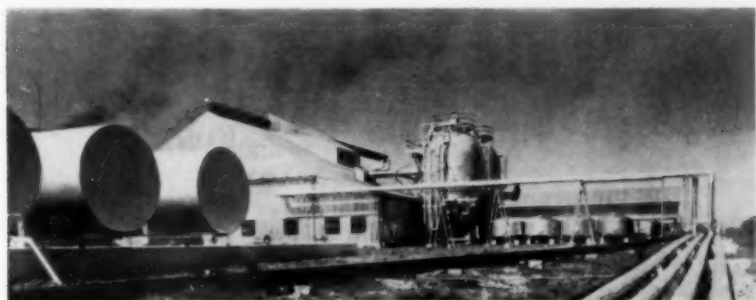
GULF SULPHUR PRODUCING AREAS

are assured a domestic source of sulphur from the Coatzacoalcos area and the estimates of the reserves in the area indicate that Mexico shortly may become one of the leading producers for the world market, also.

Responsible for this development are three brothers from Louisiana—Ashton Brady, geologist, and Lawrence and William Brady. Sixteen years ago Ashton Brady got the idea, while running through a 1904 Shell Oil exploration report, that there ought to be commercial sulphur in Mexico.

## MOUNT RUSHMORE NATIONAL MEMORIAL

One of the most widely publicized National Monuments in the entire country is the Mount Rushmore National Memorial located in the Black Hills country of South Dakota. Here four giants of American history—Washington, Jefferson, Lincoln, and Theodore Roosevelt—are memorialized in granite, their likenesses carved on the scale of men 465 feet tall, symbolic of their greatness. The colossal sculptures by Gut-



MEXICAN GULF SULPHUR'S PLANT AT SAN CRISTOBAL

The mineral was mentioned in the report, but only incidentally. He started drilling in the dense jungle in 1942 and in 1945 he confirmed his hunch by obtaining promising cores at San Cristobal. The Bradys hold substantial interests in the three companies that are working the field.

A network of roads, pipelines and power plants has sprung up around the sulphur development. Mexican Gulf Sulphur pumps molten sulphur two miles to docks on the Coachapan River and into insulated barges of 500-ton capacity. The barges carry the molten sulphur to Coatzacoalcos where it solidifies in huge vats and is broken up when needed and carried by means of a belt-conveyor system to the holds of ocean-going ships.

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son Borglum offer the major attraction of its type in the United States.

Copies of a 5-color, 1:24,000-scale map of Mount Rushmore can be ordered by mail at 20 cents each from Geological Survey map distribution centers at either Denver or Washington 25, D.C. A check list of all topographic maps of the national parks, monuments and historic sites mapped by the Survey, will be sent free upon request. Index maps of South Dakota or of any other State, showing all areas covered by Geological Survey mapping, and a folder describing topographic maps and symbols, are also free upon request.

No one who is contemplating a vacation trip of any extent can afford to start out on his travel jaunt without a liberal supply of these maps and other literature furnished at reasonable cost by the Survey and the National Park Service.—B. H. W.

## "Malabar Farm"

by LOUIS BROMFIELD

FOR THE AGRONOMIST or the livestock breeder nothing can be of greater interest than a study of the eating habits of animals. I have spent many hours watching them as they grazed across permanent bluegrass pasture and the record is almost always the same. They do not, as supposed, prefer the bluegrass and white clover to all other vegetations. On the contrary they show a great liking for all kinds of weeds and even the leaves of many trees. The pattern seems a fairly uniform one. The cattle will graze for a few minutes on the lush bluegrass and then turn aside to eat common dock, mint and other coarse weeds, even young nettles and thistles. It is clear, I think, that they are seeking something, probably minerals or even flavors, which the shallow-rooted bluegrass and white clover do not contain. The deep-rooted dock and thistles undoubtedly bring up minerals, particularly trace elements,\* from the deep layers of mineral rich glacial gravel, and the nettle, as has long been accepted in superstition and witchcraft, possesses special properties and curative qualities. In France young nettle shoots are sometimes eaten like asparagus or made into soup for human consumption. The shoots are used much as the American pioneer used sassafras tea—"to clear the blood in the spring."

Basing my deductions upon the belief that any animal knows better how to balance its diet than any professor or feed merchant, I have come to the conclusion that pasture or hay of one kind or two kinds, however lush and beautiful, is not necessarily the best pasture or forage for top nutrition and health of livestock. With this

\*The expression "trace elements" means the rarer mineral elements which appear only in such small quantities that their percentage cannot be measured, hence only a "trace." They are generally boron, cobalt, manganese, copper, magnesium, iodine, fluorine, zinc and sulphur, and some others, as compared to the major elements such as nitrogen, phosphorus, potassium, and calcium.

### MALABAR FARM

LUCAS, OHIO

Dear Sir -

Of course you are  
welcome to make a



report of anything

I have written

Louis

in mind, most of the farm meadow pastures of pure brome grass, alfalfa and ladino (the most rich, high-protein food) connect with permanent bluegrass pastures where, despite constant clipping, dock, thistles, mint, nettles, and many other "weeds" are available to the animals along ditches and creek beds, in fence corners and on patches of wet unclipped ground. We have noted many times in the feeding barns that cattle being fed the finest quality pure alfalfa hay will, after a week or two, turn away from it to eat their oat straw bedding, either from boredom or in search of something

which is lacking in the pure alfalfa. It need not be simply minerals, for our farm-grown alfalfa is, of course, not only a deep-rooted plant but its mineral content runs about 06.5, which is considerably above the average mineral content of alfalfa. The more subtle facts of animal nutrition, beyond the primary protein, carbohydrates, principal mineral needs and balances, are still largely unexplored.

It is probable that the most nutritious pasture and forage in the world is the high mountain pastures grown on a rocky soil and composed of a great variety of mixed grasses, wild flowers and weeds with a high proportion of legumes. There are areas in the Rockies and in Switzerland where cattle, fed on such pastures, actually grow fat as if they had been fed grain. A similar pasture once grew on the calcium-impregnated Great Plains region but it has been largely destroyed by over-grazing and burning over. The health and vigor of the cattle on the Southwestern Plains covered by sparse vegetation probably arise from two factors—the considerable variety of vegetation plus the high mineral content in the unleached soils of areas of low rainfall formed from an agglomeration of broken-down rock.

\*

We plow as deeply as possible when plowing because of the high mineral content and the loose quality of all but our clay subsoil. We had hardly begun operations at Malabar before we discovered that perhaps our worst problem was the restoration of the mineral and organic content of the flattish areas where a so-called "topsoil" had escaped erosion. So badly has the existing topsoil been depleted by greedy farming that where a woodchuck dug a hole, the minerally rich subsoil which he brought up from ten to twelve feet below the surface actually acted as fertilizer on the depleted topsoil and actually grew better more vigorous crops than the surrounding topsoil. The sight of a clump of extremely vigorous deep green oats, corn, soybeans, or wheat in the midst of an otherwise medi-

ocre or even sickly field invariably indicated a spot where the woodchucks had been at work. With this tip-off given us by the fat little burrowers, we set the plows as deeply as possible to bring up the subsoil and incorporate with it as rapidly as possible all the organic material possible.

Later on, continued experience led us to the heretical belief that we should have made more rapid progress in restoration if we had been able to scrape from the whole area of the farm the miserably depleted topsoil that remained and had gone directly to work on building new topsoil out of our minerally rich and well-balanced subsoil. It is largely a fact that in a period of eight years we have produced good productive soil directly from bare subsoil more rapidly than from the pitifully worn-out topsoil which we inherited. Since the many amounts of organic material introduced into both soils were approximately the same, the experience is a striking example of the mineral depletion and deficiencies of many of our old, still existing topsoils. The experience certainly would not be true in the case of all subsoils. At Malabar, we happened to be singularly fortunate in our subsoils as are all farmers in glacial moraine areas. Some subsoils are structurally and minerally so poor that once the topsoil is gone it is impossible to restore fertility by any method which is economically practical. Such land is fit only to be given back to pine forests or at best to be used as thin grazing land. All this is another evidence of the difficulty of making any general agricultural rules in a country with such an overwhelming range in types of soil, climate and rainfall as the United States.

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As has been stated before, we have at Malabar two broad categories of soil — about 85 per cent glacial drift gravel loam either in static deposits or that which has been worked about by the action of water, and about 15 per cent pre-glacial, heavy, but potentially rich, clay. In the glacial drift there are thousands of tons of stones ranging from minute fragments to glacial

boulders weighing many tons. In the clay there is little gravel. These facts are important since the capacity of the gravel loam soil for feeding minerals to plant life and eventually to animals and people is probably much greater than the similar capacity of the clay. Also, as has been stated earlier in this chapter, it is much more difficult to incorporate organic material into the clay

of soil from the largest mountains to the finest pebble, are constantly feeding minerals to the soil both in the process of direct disintegration and by transmutation through various forms of vegetation. The important point insofar as fertility is concerned is whether these disintegrated or transmuted minerals are available to the plant life growing upon the soil.



MALABAR FARM, LUCAS, OHIO

than into the loam gravel soil. These points have considerable value in the record of the two soils. While the same gains in fertility are achieved eventually in both types of soil, the results are achieved much more quickly on the loose, minerally rich gravel loam—indeed at least three times as quickly.

It is evident even to the most superficial observer that the accumulation of stones and rock fragments existing both in the gravel loam and the clay soils are constantly breaking down by the action of wind, heat, frost and water. Rocks and stones are the source of mineral fertility in all soils, which in essence are simply broken down stone and rock plus the organic material provided by the death and decay of vegetation and the mineral content of stems, leaves and tree trunks drawn from the disintegrating rocks and in the process converted into highly available organic form. In the broader sense, the rock and stone content

NOTE: The accompanying permission to reprint material of interest to rockhounds from his book "Malabar Farm" came from Mr. Bromfield shortly before his recent lamented death.

Louis Bromfield was one of America's distinguished writers, whose works included "The Rains Came" and other novels, as well as books dealing with farming, including "Pleasant Valley," "Malabar Farm" and "Out of the Earth."

Having visited him at Malabar Farm, I can say both farmer and farm were as fabulous and delightful as the books by him about it.—H.L.K.

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In recognition of its great importance as a tourist attraction a new topographic map of the Mount Rushmore, South Dakota, quadrangle, including most of the area covered by the Mount Rushmore National Memorial, has been published by the United States Geological Survey.

Also included on the map are Horse Thief and Sheridan Lakes, several well-known peaks in the Black Hills, several mines, and a number of the principal rail and highway routes.

## "Henry Gross and His Dowsing Rod"

by KENNETH ROBERTS

WHEN I FIRST LEARNED that Henry Gross, my game warden neighbor from Biddeford, Maine, was a water dowser, I already had nine springs on my Kennebunkport Maine, farm, all located by water dowsers. Prior to the Henry Gross era, some fifteen dowsers had come to my farm, either out of friendship or out of curiosity, but their rods had not always coincided, and only one of them, Raymond Lovejoy, for many years county agent for the United State Department of Agriculture, in Sanford, Maine,—knew a method of estimating depth.

Consequently, I never felt certain that the judgment of any one of them would prove to be accurate, and I never dug a spring without having the spot corroborated by three dowsers. If three dowsers agreed on a spot where water could be found, then I dug, provided we could dig through soil, clay and gravel. I hesitated to bore through ledges, because the ledges that underlie my farm are Kittery quartzite, sometimes called bluestone—one of the hardest and most impermeable of rock formations. In order to pierce bluestone we would have had either to drill or to dynamite; and in either case we would have run the risk of jolting the vein into a wholly different course, and so wasting our efforts and our money—to say nothing of discrediting the dowsers.

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KENNETH ROBERTS of recent years has taken time off from writing the adventure stories that have won him international renown, to write of his own adventures in the fascinating field of dowsing or locating wells where there is water by use of a divining rod. Read "Henry Gross and His Dowsing Rod" (Doubleday, 1951) and "The Seventh Sense" (Doubleday, 1953).

But he found time to write another great tale, "Boon Island" (Doubleday, \$3.75) recently published.

He is a former Army officer, and Washington and foreign correspondent of the *Saturday Evening Post*.—EDITOR.



All good wishes to you.

Kenneth Roberts

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When Henry appeared on the scene, the forest fires of 1947 were moving smokily down from the northwest, north and northeast. We were in the midst of a drought, and the one pond on which I had depended for fire-fighting purposes was dwindling with sickening rapidity. My home spring was running adequately, but its flow of 5 gallons a minute wasn't large enough to keep a big pump running. So I was hunting frantically for a water supply sufficient to let me fight those fires if they came roaring in on us. When I explained all this to Henry and told him that I thought of drilling at a spot located by amateur dowsers, I thought I saw a gleam of skepticism in his eye. I pointed out to him coldly that

I already had nine springs all located by dowers, and that since those nine were flowing, there was no reason why amateur dowers shouldn't be equally successful in finding a water supply for me. "You may think this dowsing stuff is a lot of baloney," I told him, "But I know it isn't."

Henry agreed amiably—and one of the few times I ever knew him to be anything but amiable was on one unhappy occasion when a state geologist deliberately undertook by shoulder contortions to defeat and discredit the action of a dowsing rod, one end of which Henry was holding.

Henry added, however, that some dowers were better than others, because the rods of some dowers unfortunately worked on seepage water; water that had seeped out of veins to form damp deposits that weren't water flows at all. When a dowser was inexperienced, he said it was always a good idea to check up on him; for an inexperienced dowser, like a bad cook, could easily make a mess of things he tried to do.

Then, to my surprise, he cut a slender, Y-shaped crotch from the young shoots at the base of a maple stump. "I'm fifty-two years old," he said, "and I've been locating water since I was twelve and found my first vein for the schoolhouse where I was going to school. Let's see the place where these amateur dowers think there might be water."

I took him to a higher spot on my farm, seat of an ancient and dried-up ice pond, where we already had a spring. That spring hole, which was eight feet deep, had not only filled in with silt and boulders, but was producing much less water than when it was first opened—far too little water for my purposes.

The amateur dowers, I told Henry, had felt faint water pulls in the vicinity of that hole, so I propose to enlarge it—blast if I had to—in the hope of achieving a supply that would let us pump from it for hours on end.

Henry picked up his maple rod, sprung it upright and walked around the spring hole. Then he shook his head. "There's

only one little vein running into that hole; just a trickle. There's nothing else here but seepage water, and it wouldn't do a mite of good to enlarge the hole. You'd better let me hunt somewhere else for a water supply.

I said that was fine, and that we'd go to the house first and have lunch.

"I never eat lunch," Henry said. "You go on up and get yours. I want to find out where this vein comes from, and see if there's another that runs into it anywhere near here, but a little lower down."

So I left him questing back and forth among the ledges and pines that surround that ancient ice pond.

When I returned, half an hour later, he had thrust a birch pole into a spot some thirty yards removed from the spring. "Right here," Henry said, "the vein that feeds that spring joins another vein that goes off to the westward, then bears to the south and runs into your stone well house a thousand feet away, at the bottom of the field. If you wanted a larger water supply up here, this would be the place to dig; but in this drought you'll get mighty little water out of both veins together. You couldn't get enough to fight a fire. Besides, they run down across the field to help feed your home spring; and if I were you, I wouldn't do anything that might possibly damage your drinking water. Let's see if we can't find something nearer the main house.

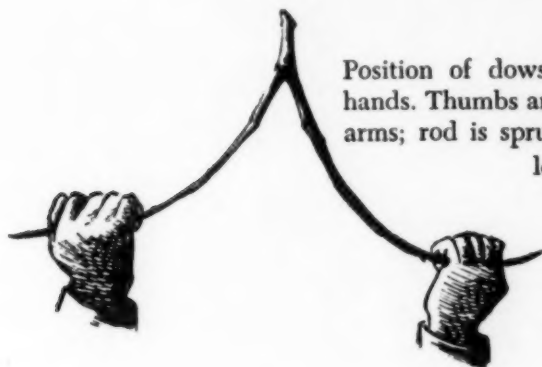
For a matter of nine years I had watched dowers, some of them dependable and some of them not so dependable, perform on my farm; but I had never seen anything remotely approaching the speed with which Henry's rod picked up and traced a set of three veins that came together in a low spot halfway between the ancient ice pond and my home. The first vein on which he stumbled pursued an erratic course to the shore of a duck pond. By leaning out over the pond, Henry's rod told him that it flowed under the pond. He rounded the pond, picked up the vein on the other side and traced it to a spot that had always, during



normal seasons, hampered our farm equipment because of its sogginess. In this drought, however, the sogginess was gone. He left the first vein at the low spot, cast around in a circle and found that at a given spot the first vein joined two others. At

"By gorry," Henry said, "I wish there was! There's a lot, though, because I got a good pull, and this is the worst drought we've had for years."

I took only one precaution against failure. Two men were helping me work the



Position of dowsing rod in Henry's hands. Thumbs are on outside of rod's arms; rod is sprung upright at chest level.

the intersection he thrust a stick. After these three veins had united, he found, they continued onward in the direction of my home, passing through tough ledges of Kittery quartzite. With his rod upended before him, he followed the course of that outgoing vein as readily as he would have followed a cowpath.

"The place for you to dig," he told me, after examining the ledges on which my farmhouse is built, "is the low spot where those three veins come together."

He went back there with me and again circled the low land. "There's enough water under there," he said, "to supply water for an entire town."

"How deep are those veins, Henry?" I asked.

"I can't be sure," he said. "I've heard there's a way to tell depth, but I never found out what it was. I can only guess at it, basing my guess on the strength of the rod's pull. I'd say that maybe they're five or six feet underground."

"Of course," I ventured, "there's no way of telling how much water runs through 'em."

farm, and I had them bring a posthole auger and dig five holes around the spot Henry had marked. Each hole was twenty-feet deep, a foot of loam, two feet of blue clay, five feet of crushed shell deposit and then a heavy bed of blue clay. As the auger was drawn for the last time from each hole, we could see the water truckling into the holes through the shell deposit. In five hours the water in each of the five holes stood within two feet of ground level.

\*

For a time, that summer, [1948], we toyed with the idea of becoming tourmaline hunters. The finest and most beautiful tourmalines in the world have come from Mount Mica in Maine, and the discovery of tourmaline deposits there has always been purely accidental. A man or a boy, wandering on the slopes of Mount Mica, might poke a stick into a rock crevice and find that it had plunged into a bushel-sized orifice packed with shimmering green, yellow, blue, red tourmaline crystals. All attempts to mine Mount Mica commercially have had barren results.

So I sent to a tourmaline dealer in Nor-

way, Maine, for a boxful of tourmaline chips in different colors, and laid them out on a long table. But when Henry touched the tip of his rod to a green one, it thereafter worked only on another green chip; never on a yellow or pink or blue chip. Moreover, it worked as decisively over a green chip the size of half a fingernail as it did over a fat green cabochon tourmaline that Mrs. Roberts wears in a ring. Thus we abandoned all thoughts of making ourselves tourmaline magnets, for since Mount Mica is literally covered with tourmaline chips, we would have had no way of knowing whether Henry's rod was influenced by a single chip or by a vast deposit of crystals.

(NOTE.—The foregoing paragraphs, of particular interest to rockhounds, are reprinted by permission of the author from the book, "Henry Gross and His Dowsing Rod," [Doubleday, Garden City, N.Y. 1951.] copyright 1951 by Kenneth Roberts and Anna M. Roberts. In next issue will be some paragraphs from the author's account of the manner in which Henry Gross, through practice, developed his dowsing techniques. These are taken from his book "The Seventh Sense," [Doubleday, 1953.] Copyright 1953. EDITOR.)

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## Midwest Club News

BERNICE WIENRANK, *Club Editor*

4717 North Winthrop Avenue  
Chicago 40, Illinois

RACINE GEOLOGICAL SOCIETY was formally organized May 15, 1956. On June 12 the new group heard Dr. Edward Taube, of the University of Wisconsin, speak on "Minerals and Rocks." Fifty-six people attended the meeting.

JOLIET MINERALOGISTS featured "The History of the Petroleum Industry" at its May 23 meeting. Dr. F. L. Fleener reviewed the history of oil from Biblical times to the present, and the film "Drake Well" was shown. This famous well was the first well drilled for oil and it began producing on August 24, 1859. It was the spark that touched off one of our greatest

industries, now comprising 350,000 wells and involving millions upon millions of dollars invested in all phases of the industry.

In May JM completed a series of ten monthly lectures and demonstrations in Determinative Mineralogy.

\*

CINCINNATI MINERAL SOCIETY on April 25 heard Dr. William Schideler, chairman of the Department of Geology of Miami University, speak on "The Romance of Gems." Dr. Schideler related many interesting legends and superstitions about diamonds, opals, sapphires, amethyst and jade. He exhibited and discussed models of the famous diamonds, and choice gems from his own collection.

On May 20 CMS collected calcite, fluorite and Mississippian fossils from a quarry near Danville, Kentucky.

\*

MINNESOTA MINERAL CLUB held a "swap picnic" on June 10 in Minneapolis's Minnehaha Park. In addition to the customary picnic activities, the group traded mineral specimens and swapped rock stories.

\*

NEBRASKA MINERAL AND GEM CLUB on April 18 heard Dr. Donald Spaulding, of Coin, Iowa, give an amusing account of his experiences during a recent trip to Burma for rubies and sapphires. At this same meeting, Mr. Hal Straight, of Adel, Iowa, presented a large slab of lepidodendron to the club. The slab is from the petrified tree found at Knoxville, Iowa, two years ago. It is about four inches thick and about 24 by 18 inches in area, and weighs about 100 pounds. The slab is highly polished and richly colored.

\*

CENTRAL ILLINOIS ROCKHOUNDS held its Fourth Annual Exhibit at Y.M.C.A. in Decatur, June 9-10. The show featured minerals, Indian relics, sea shells, jewelry and lapidary equipment.

\*

GEOLOGICAL SOCIETY OF MINNESOTA traveled to Barron, Wisconsin, on June 17, to study the geologic features of the area. Of special interest to the group was the quartzite range of low lying mountains (Barron Hills), northeast of Barron, with its catlinite (pipestone) and conglomerate cliff. Specimens of pipestone were collected.

CENTRAL IOWA MINERAL SOCIETY recently held a successful two-week exhibit of gems and minerals in the Younker's Department Store in Des Moines, Iowa. An appraiser valued the display at more than \$12,000. Local schools sent entire classes over to view the show.

AUSTIN GEM AND MINERAL SOCIETY issued the first copy of its bulletin, *Achates*, in April. It is a very good bulletin. "Achates" is from the Greek word meaning loyal friend. It is also the name of a river in Sicily along whose banks, according to Pliny, agates were first found. The word agate stems from Achates. Beautiful agates are found in abundance in Minnesota, the home state of AG&MS.

WISCONSIN GEOLOGICAL SOCIETY at its May meeting heard Mr. Goff Cooke of Chicago, talk on "Continental Dehydration." He explained how the Western part of the United States is becoming warmer and dryer as the years go on. The lecture sparkled with witticisms. Afterwards, Mr. Cooke with the assistance of his wife, Helen, showed a film of a trip they had made from the Mexican Border to the Columbian Ice Fields.

MICHIGAN MINERALOGICAL SOCIETY held its annual picnic on June 10 in Avon Park in Rochester, Michigan. In order that the ladies of the club would be free to enjoy the fun, a catering service was hired to serve the lunch. Picnic games were played and mineral and gem prizes were awarded to contest winners.

CHICAGO ROCKS AND MINERALS SOCIETY on May 12 was transported back to the Carboniferous age by Dr. Robert Whiffield's vivid talk on "The Mazon Creek Fern Fossils." The ferns which were later transformed into fossils flourished on the shores of an ancient sea 240,000,000 years ago. Strip mining operations near Joliet, Illinois, have made them easily accessible to fossil hunters. Others have been exposed by the Mazon Creek, which has cut down into the shale beds in which they are found.

INDIANA LAPIDARY SOCIETY recently panned for gold in Greenhorn Creek in Brown County, Indiana. The panning party was led by Mr. John Uhl, a geologist whose hobby is gold panning. The gold found in Brown County is glacial in origin and varies in size from microscopic flakes to nuggets weighing up to one-fourth Troy ounce. Diamonds, left by the glaciers, have also been found in this locality.

MARQUETTE GEOLOGISTS ASSOCIATION at its April meeting heard Dr. Frank Fleeener give an interesting talk on "Water, The Mysterious." Water is a mineral but is very seldom found in collections because it is difficult to obtain in a pure state. Even rain water is impure since it contains gases absorbed from the atmosphere. Harvard's museum contains a jar of pure water, which was brought through a vacuum without gases.

INDIANA GEOLOGY AND GEM SOCIETY planned to make a field trip on June 10 to Versailles, Indiana, to collect brachiopod and trilobite fossils from the Ordovician period.

CHICAGO LAPIDARY CLUB held its sixth annual competitive Gem and Jewelry Show May 18-20. Winning entries were awarded gold medals or silver loving cups. The prize-winning gems were on display at the Chicago Natural History Museum throughout the month of June.

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EARTH SCIENCE CLUB OF NORTHERN ILLINOIS' members received excellent indoctrination for their summer field trips when Mr. Helmer Walstrum spoke to them on "Prospecting" at their June 8 meeting. Mr. Walstrum, an industrial engineer, is the author of a book entitled "Prospecting for Minerals." He owns 18 mining claims in Colorado and several in Idaho, and is president of two Chicago firms that manufacture Geiger counters and deal in prospectors' supplies. He told the group how to look for minerals and gave them detailed instructions on how to stake a mining claim.

### NEWS OF OTHER SOCIETIES

MINERALOGICAL SOCIETY OF ARIZONA in an impressive ceremony on April 6, presented a beautiful loving cup to its co-founder, Arthur L. Flagg, in honor of his untiring work with junior mineralogists. The presentation was made by James Blakley, who was one of MSA's first two junior members 20 years ago. The trophy will be awarded annually to the Arizona school that displays the most outstanding collection of miniature cabinet specimens at the Arizona State Fair. Arthur Flagg, who is president of the American Federation of Mineralogical Societies, is Arizona's best-loved mineralogist and is affectionately known as Mr. Rockhound.

\*

WASATCH GEM SOCIETY on April 21 made a field trip to an obsidian area near Fillmore, Utah. Good obsidian was obtained.

\*

YE OLD TIMERS' MINERAL CLUB planned to hold a meeting in Fresno, California, on June 23, during the California Federation's Annual Convention. Members who could not attend were invited to send letters which would be read at the meeting.

\*

MINERALOGICAL SOCIETY OF PENNSYLVANIA's safety slogan is "Your collection is only as good as your safety." The club has

an excellent accident prevention program and has recently supplied its safety committee with a complete first aid kit from the Mine Safety Company. May it never be needed!

GEM CUTTERS GUILD OF BALTIMORE made a two-day field trip to Amelia and Rice, Virginia, April 28 and 29. At Amelia, Virginia, the party collected amazonite and at Rice, Va., it prospected for amethyst.

SAN FERNANDO VALLEY AGRICULTURAL FAIR will include for the first time a Gem and Mineral Show. All mineral and gems societies in the San Fernando Valley region are invited to exhibit. The fair will be held August 30—September 3, in the fair grounds at Devonshire Downs, Northridge, California.

OKLAHOMA MINERAL AND GEM SOCIETY visited the Quartz Mountain State Park in southwestern Oklahoma on April 21. In the Pleistocene gravels of the park's rough arroyos the group found an abundance of red plume agate, petrified palm wood, red and yellow jasper, jasp-agate, and petrified wood of assorted colors and patterns.

VERDUGO HILLS GEM AND MINERAL SOCIETY has completed a five feet by three feet gem-stone mosaic of its club emblem. The design of the emblem is a deep V crossed at the center and top with curved bands bearing the club's name. A crossed pick and shovel is shown in the lower half of the V and the top half pictures the Verdugo Hills. The background of the gem-stone emblem is made of several layers of earth-toned baroques, representing the earth's strata. The strata section consists of jasper, agate, howlite, amethyst and petrified wood in colors ranging from black through red, yellow, brown and white. Above the layers of strata, the Verdugo Hills are formed with green and yellow baroques of jasper, agate, jade and Californite. The upper background and sky are made from slabs of creamy travertine onyx.

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The emblem contains 87 pieces of jade totaling 390 square inches and 91 pieces

of travertine onyx covering 660 square inches. The hills and strata are made up of 2,563 polished baroques. It is estimated that 1,153 hours were spent on this project. It has been framed and mounted on a stand. It will be on exhibit at the California Federation's Annual Convention in Fresno, California, June 22-24.

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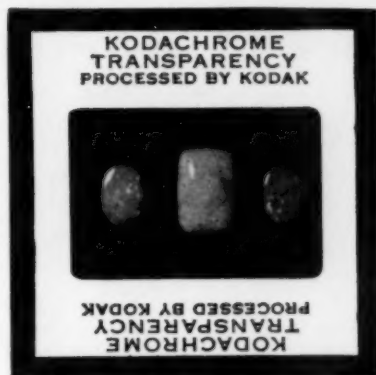
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